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COLLECTING BEES AT GUALAN, GUATEMALA.

BY WILMATTE P. COCKERELL, BOULDER, COLORADO.

In going from Quirigua to Guatemala City, we passed through a desert region—a place of curious forms of cacti, but especially interesting because of the trees and shrubs, at that time of the year, late February, covered with splendid blossoms, and usually without leaves. One tree (*Gliricidia maculata* H. B. K.) was very common and with its delicate pink flowers reminded one of the peach of the temperate zone, but inspection showed it to have a papilionaceous flower. This, I thought, would be a wonderland for bees, since bees are peculiarly adapted to desert areas.

When we returned to Quirigua, I determined to spend two or three days at Gualan, and I anxiously inquired of every one whether there was some one in the village who would befriend me, a missionary perhaps, a priest, an American who owned a coffee finca or a hotel-keeper who spoke English; and at last I found a young man who sometimes went to Gualan to buy cattle for the commissary of the United Fruit Company, and he said there was a hotel and that the negro-French proprietor did speak English, but that the place was usually full of drunken natives and was absolutely impossible for an American lady. That settled the hotel question, but I could at least go up between trains, though even for so short a time it was not considered wise for me to go alone, and Mr. Earl Morris was detailed to go with me. There was much joking about the biological altar needing a sacrifice, for my friends at Quirigua were archaeologists and were uncovering one of the wonderful old Maya temple cities, and bees looked very small to eyes focused for forty feet doorways. But Mr. Morris was a splendid assistant, and helped in every way, even if in his heart he was sighing for sculptured walls and ornate pottery. The train left Quirigua at ten o'clock and arrived at Gualan at eleven-thirty, the down train picked us up at two-thirty. It was a wonderful three hours! The lovely pink and white blossoms of *Gliricidia maculata* were visited by great Carpenter bees (*Xylocopa*), but unfortunately the flowers were so high, and the bees flew so swiftly that I secured only a few specimens.

The best catch of that day was a very small bee belonging to the genus *Perdita*, and if you saw it I am afraid you would agree with the Indians who said, "So small bugs can be of no use." The *Perditas* are among the smallest of bees, and yet the finding of one on *Cordia alba*, a yellow flowered tree, at Gualan, was a distinctly dramatic and interesting thing to me. Years ago my husband described seventy of these small bees which he had collected in New

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Mexico, and half a dozen have been found in Northern Mexico, and I had often wondered whether the little bees were in Central America if some one who was interested in finding them would only look. And there it was, a new species that extended the distribution of the genus *Perdita* a thousand and more miles, and I had added a tiny fact to the everlasting why of the universe.

A few hundred yards below the village there was a number of trees covered with cardinal flowers, and I was especially anxious to collect from them, but we were beguiled into chasing butterflies, and the yellow-flowered trees had other bees than the *Perdita tropicalis*, so that it was time for the train, and we had seen only the glow of the cardinal tree from a distance.

Another trip was imperative, and on that day I had an amusing experience. The conductor of the train, a rather interesting Guatemalteco brought me a Ladies' Home Journal and a little note which said that if I were English he would lend me the magazine; what did I do with my veil (net) and did I, like other strangers, think them savages to be conquered?

Judging that he wrote English better than he spoke it, and read better than he understood, I wrote that I was grateful for the magazine (and really, even the Ladies' Home Journal looked good to me; that I had the net to catch bees, because my husband studied bees from all parts of the world. He answered: "Thanks. Good for him and the world. Hope that he finds the Bee that carries the strength of life—like they do honey. So that the wise live long to be learned, and the fools long enough to learn."

There was more correspondence about the duty of one nation to another, the books that would give a Guatemalteco an idea of the United States, all of which is too lengthy to record here, but just before we reached Gualan he wrote: "Guess I tire you, I like to write English to get acquainted with. Excuse me—My wish that the bees won't bite you while searching for flowers. That they sometimes on the mountains sing you a chorus. Remembering you of God, the father of all peoples."

When we reached Gualan, we went at once to the Cardinal Tree, and found it even more wonderful than we had thought. Imagine a great tree, fifty to seventy-five feet high, with branches literally covered with fragrant cardinal flowers, and the flowers swarming with wasps and bees, and on the branches great gaily colored birds assembled to eat the insects. I too wanted to collect insects, but the lowest branches were just out of reach. Mr. Morris offered to climb up and collect for me. Many Indians gathered in the path just below us, and called out to Mr. Morris

that the tree was full of 'serpents,' and that the branches would break and dash him to destruction, but he climbed on. Soon he began to beat himself, and I knew that the ants, the little guardians of the tree, were after him. Then, too, he had been obliged to crawl over some of the curious flat cactus that grows along the trunks of trees in that country, and when I added my voice to the Indians cry, "Come down," Mr. Morris said that he thought he would. We made a pile of stones and boxes, and so were able to get a few wasps and bees, but I shall never cease to envy the birds so gracefully collecting from the beautiful Guacamaya. With wings I might have secured a dozen forms new to science. I carried home a flower covered branch, and later Mr. Morris secured leaves and pods from the same tree, and great was my surprise and delight when Captain John Donnell Smith, of Baltimore, said that the tree itself was new !*

The excavations at the ruins became daily more interesting, and I could not ask Mr. Morris to spend more time with me, but most fortunately I learned that the station agent's wife spoke English, and she generously kept me at her house one night, thus, giving me the better part of two days for collecting.

I found the walls around one of the patios, here a place for chickens and turkey-buzzards instead of ferns and orchids as in Guatemala City, alive with red woolly *Centris* (*C. tarsata* Smith) nesting—there were literally thousands of them, and I spent the most of one afternoon getting specimens of these bees—and the bees (*Mesochaira bicolor* Fabr.) that were parasitic in their nests.

Then, too, there were some *Megachiles* (*M. gualanensis* n. sp.), leaf-cutting bees, nesting in the same wall, and they had interesting parasites (*Coelioxys sanguinosus* n. sp.). Dozens of small Indian boys watched me, and occasionally begged to be allowed to use the net. Some native teachers came out to drive the boys into school, but stayed to watch the strange 'Inglese' catching 'musca.'

"For what does she want the little bugs," they inquired of my hostess. "Does she make medicine of them?" Not such a strange supposition, since they grind up all sorts of insects and use them as medicine.

"The Senora does not gather them for medicine," they were told, but the fame of the medicine-maker spread, and a woman brought a little child with a terrible sore on his neck, and begged me to give her the fly that could cure her baby. It was pitiful !

**Phyllocarpus* n. sp.; the genus previously known only from a single species occurring in Brazil.

A more amusing incident followed. A larger boy asked which made the best medicine, and I begged Senora Caldero to explain that the bees were for study. "How can you explain that to such ignorance," she asked, but I begged her to try, and the boy said that he understood, but a few minutes later he was telling a young girl that the little black bees were for pains in the stomach—the red ones for pains in the legs. When reproached, he excused himself by saying: "The other is much too difficult for a girl to know." The inferiority of woman serves its purpose the world over.

My adventures did not end with the day, for in the middle of the night I was awakened by a great ringing of bells, and the light from a burning house lighted my room. "Get up! Get up!" my hostess called, "there is a terrible fire. Do not try to save anything but come quickly." Fortunately I had lain down with my clothes on, so that I was ready in a minute, carrying with me my precious box of bees. I found my hostess and her children wrapped in blankets, and we all hurried out into the street. The fire was only a few doors from our house, and with a brisk wind blowing it looked as though nothing could save any house in the village. Some way in the crowd I was separated from Senora Caldero and her family, and I found myself in the middle of the road surrounded by people wailing and crying to the saints. It was a weird moment! The men had formed a chain from the fountain and passed water in every sort of jar and pan, but they worked effectively, and I soon saw that the fire would be conquered. I thought I would be safer in the house, for I did not like being in the midst of that excited crowd, so I crept back into the dark house, still holding jealously my little box of bees,

It was not long before my host came up from the office where he slept, and the family was brought home. There was much embracing and much excited talk, and more wine and whiskey offered to everyone in the good Latin-American fashion, and the daylight was almost upon us before the village became quiet again.

The next morning a horse and a moso were ordered for seven o'clock, and came at eight, the usual custom of the country. Until two o'clock I rode along the river collecting here and there, and enjoying the bright-hued birds, and the beautiful plants. Two plants stand out in the memory of that forenoon; *Antigonon guatemalense* Meissn., a vine with great racemes of most exquisite pink flowers; the other (*Adenocalymna macrocarpum* Donn. Smith?)* a bush with great violet-purple bells, like a glorified pentstemon,

*Capt. Donnell Smith wrote that he was not quite sure of the species of *Adenocalymna*. More material is needed. The plant belongs to the *Bignoniaceae*.

but with a dreadful odor. The little moso who carried my press could hardly be induced to carry a piece. He made me understand that it would give me diseases unnumbered, but I insisted, and so far not a single disease has resulted.

The plants collected were all kindly identified by Capt. Donnell Smith. The following list of Gualan bees has been prepared by my husband. The new species are in course of publication in the Annals and Magazine of Natural History.

BEES OF GUALAN.

- (1.) *Prosopis quadratifer* n. sp. At flowers of *Iresine paniculata* (L.).
- (2.) *Prosopis gualanica* n. sp. One male.
- (3.) *Halictus hesperus* Smith. 27 females. One at flowers of *Cordia alba*; five at flowers of *Phyllocarpus* n. sp.; the rest at *Vernonia aschenborniana* Schauer, collecting the white pollen.
- (4.) *Halictus townsendi* Ckll. One female, Feb. 23, at flowers of *Tithonia diversifolia* A. Gray.
- (5.) *Augochlora binghami* Ckll. One female.
- (6.) *Augochlora* sp. 1 female.
- (7.) *Augochlora cordiaefloris* Ckll. One female, Feb. 23, at flowers of *Calopogonium cæruleum* Desv.
- (8.) *Agapostemon nasutus* Smith. Seven males, seven females. Six of the males and six females at *Vernonia aschenborniana*; one male at *Calopogonium cæruleum*; one female at *Tithonia diversifolia*.
- (9.) *Agapostemon nasutus gualanensis* n. var. Four males.
- (10.) *Perdita tropicalis* n. sp. At *Cordia alba*.
- (11.) *Centris totonaca* Cresson. One female, "at flowers of yellow vine."
- (12.) *Centris tarsata* Smith. Eleven males. One from flowers of *Iresine paniculata*.
- (13.) *Centris inermis gualanensis* n. subsp. At flowers of *Calopogonium cæruleum*. Also at Quirigua.
- (14.) *Leptergatis toluca* (Cresson). One male at flowers of *Cordia alba*.
- (15.) *Mesoplia azurea guatemalensis* n. subsp. At flowers of *Calopogonium cæruleum*.
- (16.) *Mesocheira bicolor* (Fabr.). Two females.
- (17.) *Exomalopsis callura* n. sp. At flowers of *Vernonia aschenborniana*.
- (18.) *Exomalopsis similis* Cresson. One female at flowers of *Cordia alba*.

- (19.) *Xylocopa wilmattæ gualanensis* n. subsp.
- (20.) *Xylocopa fimbriata motaguensis* n. var.
- (21.) *Xylocopa barbata* (Fabr.). At flowers of *Calopogonium cæruleum*.
- (22.) *Ceratina nautlana* Ckll. One female, at flowers of *Vernonia aschenborniana*.
- (23.) *Ceratina virescens* Friese. One male.
- (24.) *Ceratina regalis* n. sp.
- (25.) *Ceratina xanthostoma* n. sp.
- (26.) *Ceratina xanthostoma rufipennis* n. var.
- (27.) *Coelioxys sanguinosus* n. sp.
- (28.) *Megachile gualanensis*. Both sexes.
- (29.) *Dianthidium gualanense* n. sp.
- (30.) *Euglossa cordata* (L.). One male at flowers of *Arthrostemma fragile* Lindl.
- (31.) *Melipona fulvipes* Guér. One male.
- (32.) *Trigona zexmenia* n. sp. At flowers of *Vernonia aschenborniana*. Also found at Quirigua.
- (33.) *Trigona mellaria* Smith. One at flowers of *Calopogonium cæruleum*.
- (34.) *Trigona cupira* Smith. Twelve workers, eleven at *Vernonia aschenborniana*.
- (35.) *Trigona amalthæa* Oliv. Two workers at *Calopogonium cæruleum*.

All these bees are new to the fauna of Guatemala. The bees recorded from Guatemala up to the beginning of 1912 are : *Halictus providens* Smith, *Augochlora chryseis* Smith, *A. radians* Vachal, *A. nigromarginata* Spinola, *Agapostemon brachycerus* Vachal, *Emphoropsis fulva* (Smith), *Centris clypeata* Friese, *C. labrosa* Friese, *Tetrapedia moesta* Cresson, *T. maura* Cresson, *Bombus lateralis* Smith, *B. unifasciatus* Smith (*mexicanus* Cresson) *Melipona nigripes* Friese, *Trigona fuscipennis* Friese, *T. schulthessi* Friese, *T. flaveola* Friese.

BOOK NOTICE.

WOODLAND IDYLS. By W. S. Blatchley. The Nature Publishing Company, Indianapolis. Price \$1.25, post-paid.

In this little book are recorded the observations and reflections of one who pitched his tent, and spent his summer vacation, apart from the haunts of men, living, in gipsy style, upon squirrels, berries, and other woodland supplies.

The author has contrived, by an unusual construction of his sentences, to give an air of quaintness to his work—as in:—

"The prunella, favourite of my summer blossoms, did I find on yesterday," page 86.

"Tiny the stream, yet this broad valley has it carved," p. 87.

"The writing off my mind, squirrels and marmots do I seek," p. 167.

One passage, at least, in *Woodland Idyls*, will be of interest to entomologists. It is that in which the author tells that he saw an ichneumon light upon a spider, *which a wasp was carrying off*, and deposit an egg in it (pp. 206—9). Does not this afford us a glimpse into the life-histories of such insects as Zabriskie's *prædator*, in Ashmead's genus, *Sphecophagus*?

A few brief quotations from the book under consideration will set the author's style and trend of ideas fairly before the readers of the Canadian Entomologist.

The author's descriptive powers:—

"I saw a skeedoodlum of a wren, his feathers half gone from moulting, his body not bigger than thirty seconds, yet with his head in air he was rolling forth sound enough for a cardinal or other bird ten times his size. 'Cher-whitty—cher-whitty'." * * * * "A cheery little cuss is he, who would sing were his tail on fire." (p. 42).

"Fuzzy gnats dance in rhythmic mazes before my eyes, while their cousin, a slender reddish-gray mosquito, probes my flesh, I do not feel him until his body is red and gored with my blood. After swatting him the itch begins. Niches they fill in the great scheme of nature. Organs they have for performing all the duties of life. Those duties are but few—to eat, grow and reproduce their kind. Lowly creatures we call them, yet "lowly" only because we esteem ourselves "high." (p. 79).

The author as a botanist:—

"The densely flowered spikes of the vervain before me, some of them two feet in length, have but an inch or two in blossom at a time. The seed pods or fruit of the past are below, the unopened buds of the future above. The flowers are now close to the top, the fruiting portion long, the budding part short, for its season is near the close. Life, present work, is now in the flowering part; duty performed, finished work, in the seed part; promises or hopes for the future in the buds. Only the present blooming part, that which is active, is beautiful. That is the part attractive to the human eye, in the plant as well as in the human. What are you doing? Be up and at work. Live not upon a past reputation. Chance not your happiness upon the budding unlived future, which may be seared by a night's hoar frost into something dull and dead." (pp. 46-7).

The author as a Darwinian:—

(The Red-headed Woodpecker). "In a century from now the bills of his descendants will be broader, their eyes keener, their throats wider, and they will be part swallow, part woodpecker, creatures better adapted to the life they have adopted. For he is slowly changing from a simon-pure woodpecker, where the struggle for life grows ever more bitter, as the forests grow fewer, into a cleaver of the air, a swallower on the wing, a contortionist who can rise and fall, twist and turn in rapid flight after his oft-times elusive prey." (p. 203).

The author's philosophy:—

"Long may, and doubtless long will, the world wag on without me. My turn at the wheel has ended. Content am I to sit in the shade and practice shooting at a marmot's head." (p. 171).

The author's religious opinions:—

"Great oaks like these were most worthy to be the Gods of the Druids. As much right to worship them had they as I the sun. I revere or worship only that which I *know* exists—that which is the highest, most powerful of all things known to me. Back of or above the sun there may be somewhere—but where we know not, nor shall we ever know—a power higher than the sun, master of him, and of all other suns—the Overlord of all. Until I know, which I shall never do, that there is such an Overlord, until then I worship, if you may call it worship, that highest power, that ruler which my senses ken." * * * * "Then let the oak tree my Sabbath temple be, let the sun be the God unto whom this morn my reverence is due, and this spot of mother earth the altar at which I kneel to do homage unto him." (pp. 228 and 229).

The "God-gifted organ-voice of England," telling of other devotions, breathes a different spirit from that expressed in the last quotation. It says:—

"Thou sun, of this great world both eye and soul,
Acknowledge HIM thy greater; sound His praise
In thy eternal course, both when thou climb'st
And when high noon hast gain'd, and when thou fall'st."
—Adam's Prayer in *Paradise Lost*.

The writer of this article ventures to express an earnest hope that the author of *Woodland Idyls* may attain unto the higher knowledge—the knowledge spoken of by the "MASTER," in His address to His Father Almighty:—"This is life eternal that they might *know* thee the only true God, and Jesus Christ whom thou hast sent."—St. John XVII.: 3.

T. W. F.

Mailed September 18, 1912.